DOCUMENT RESUME

ED 373 645 HE 027 631

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TITLE Why the Five-Year (or Longer) Bachelors Degree?: An Exploratory Study of Time to Degree Attainment. AIR 1994 Annual Forum Paper.
PUB DATE Jun 94
NOTE 22p.; Paper presented at the Annual Forum of the Association for Institutional Research (34th, New Orleans, LA, May 29-June 1, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Persistence; *Bachelors Degrees; College Environment; College Graduates; *Educational Attainment; Enrollment; *Graduation; Higher Education; Incidence; Input Output Analysis; Institutional Research; Prediction; *Predictor Variables; State Universities; Student Characteristics; *Time Factors (Learning); Undergraduate Students
IDENTIFIERS *AIR Forum; *Time to Degree; United States (Southeast)

ABSTRACT

This study utilizes student enrollment data often available to institutional researchers in order to predict and explain time to degree. The population for the study included all 1992 bachelors degree graduates (n=868) of a state-supported comprehensive university in the Southeast. Block multiple regression based upon Astin's Input-Environment-Output assessment model was used to examine the impact of a number of possible predictors (student background characteristics, college environment variables, and enrollment variables) on the total number of quarters of enrollment necessary for completion of degree requirements. Results indicated that: (1) cumulative credit hours earned, freshman year grade point average, Scholastic Aptitude Test scores, the number of courses dropped, high school grade point average, and age at matriculation had the greatest influence on time to degree; (2) older students took longer to complete their degrees than younger students did; (3) females obtained their degrees slightly more quickly than did males; (4) living in a university residence hall and enrolling in an orientation course fairly substantially decreased time to degree; and (5) academic major or college attended had a less substantial effect. (Contains 21 references.) (JDD)

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Why the Five-Year (or Longer) Bachelors Degree?: An Exploratory Study of Time to Degree Attainment

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Running Head: TIME TO BACHELORS DEGREE

Paper presented at the annual Forum of the

Association for Institutional Research

New Orleans, Louisiana May 29-June 1, 1994

HE027631

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for Management Research, Policy Analysis, and Planning

This paper was presented at the Thirty-Fourth Annual Forum of the Association for Institutional Research held at The New Orleans Marriott, New Orleans, Louisiana, May 29, 1994 - June 1, 1994. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Editor
Forum Publications

Abstract

Concerns over accountability and the outcomes of the undergraduate experience coupled with financial constraints on the part of students, their families, and institutions have resulted in increased interest in baccalaureate degree graduation rates as recently manifested in the federal Students' Right-to-Know and Campus Security Act. The current exploratory study shifts the focus from the rate of degree attainment to the issue of the enrollment period necessary for degree completion. Block multiple regression based upon Astin's I-E-O assessment model was used with time to degree data to construct a tentative causal model of time to degree attainment. The results should be of interest to institutional researchers, administrators, student affairs practitioners, budgetary planners, and others for whom time to degree is a concern.

Why the Five-Year (or Longer) Bachelors Degree?: An Exploratory Study of Time to Degree Attainment

The issues of financial constraint, accountability, and concern over the outcomes of the undergraduate experience, which emerged as increasingly important during the decade of the 1980s, have remained critical as institutions have entered the 1990s. A nation-wide economic slump and a downturn in the numbers of traditional aged undergraduate students in many areas have caused legislators, taxpayers, students, and their parents to increase the pressure on colleges and universities to document both their effectiveness and their efficiency. A poor financial situation and the concomitant need to demonstrate that funds are being well spent and that students are receiving substantial benefits for their investments in higher education remained key concerns during 1993 (El-Khawas, 1993). Such concerns were highlighted in last year's AIR President's General Session which included a discussion of what Delaney (1993) termed the public confidence crisis, which was perhaps best summed up in the statement that "legislators, taxpayers, students, and parents seem to be questioning the value of our institutions and the integrity of our stewardship."

An emerging issue manifested by these concerns over the last several years has been the length of time necessary for students to complete bachelors degrees. It has become commonplace for institutions to determine what percentages of students who first enroll at a given time graduate after four, five, six, or more years. The reporting of such information for student athletes has been mandated by the National Collegiate Athletic Association for

some time and has recently been required for all students as part of the federal Students' Right-to-Know and Campus Security Act.

The current study shifts the focus from rate of bachelors degree attainment to the duration of time required for students to successfully complete their degrees. There are two reasons why time to degree, rather than rate of degree attainment after a given time period, is an issue worthy of consideration. First, students are much more interested in how long it will take them to actually complete their degrees than whether or not they will graduate in a given time interval. Predicted enrollment periods can help students (and their families) plan for tuition expenses, entry into the labor force, and for many other important concerns. Second, being able to predict how long students will be enrolled and knowing whether time to degree can be expected to vary among, for example, male and female students, minority and majority students, resident and non-resident students, and students of varying academic ability levels, would provide important planning information. Improved estimates of instructional demand, residence hall capacity, utilization of academic and student services could be accomplished with information on predicted time to degree.

While little, if any, published research has focused on time to degree attainment (P. T. Terenzini, personal communication, August 10, 1993), it was hypothesized that well-researched influences on educational attainment (whether or not students obtain a degree within a given time interval) would similarly influence time to degree. For this reason the influences of student background, college environment, and student involvement variables

along with enrollment variables such as cumulative hours earned and number of courses dropped were considered as possible predictors of the time required for degree attainment.

Anderson (1986), Astin (1991, 1993), Ethington and Smart (1986), Stoecker, Pascarella, and Wolfe (1988), and many others cite academic ability (as manifested by high school grade point average, SAT scores, and undergraduate grade point average) as the best predictor of obtaining a bachelors degree within a given time period. Astin (1991, 1993) additionally cites gender (being female), SES, and religion (being Jewish or being Roman Catholic) as background variables which predict educational achievement.

College environment effects which have been suggested to positively influence educational attainment include attendance at four-year (Dougherty, 1987; Velez, 1985), private (Smart, 1986), selective (Perrucci, 1980; Stoecker, Pascarella, & Wolfe, 1988), and smaller-sized (Astin, 1993; Stoecker, Pascarella, & Wolfe, 1988) institutions, living in a university residence hall (Astin, 1982, 1991, 1993; Velez, 1985), participation in college orientation activities (Forrest, 1985; Pascarella, Terenzini, & Wolfe, 1986), receipt of financial aid (Carroll, 1987; Heverly, 1987; St. John, Kirshstein, & Noell, 1988), academic major, institutional provision of a true core curriculum, the percentage of women and the percentage of Ph.D.s on the faculty, and the percentage of resources invested in student services (Astin, 1993).

Positive student involvement effects include the quantity and quality of student relationships with faculty (Astin, 1993) and with peers (Astin, 1993; Endo & Bittner, 1985; Stoecker, Pascarella, & Wolfe, 1988), involvement in intercollegiate athletics (Pascarella &

Smart, 1990), and part-time employment on campus (Astin, 1982; Ehrenberg & Sherman, 1987).

This (far from complete) list of potential predictors of time to baccalaureate degree completion is not only extensive, but it also includes may student-related variables not typically accessible or familiar to institutional researchers. While a scholarly study of time to degree which includes a wider range of college environment and student involvement variables is planned by the author (see discussion below), the focus of the current research is to utilize student enrollment data often available to institutional researchers in order to predict and explain time to degree. The results of this study, then, will give a less than complete picture of influences on time to degree, but nevertheless should provide a model which institutional researchers can use to aid decision making, budgetary, academic, and space planning, and academic advising.

Methods

Subjects

The population for the study included all 1992 bachelors degree graduates of a state-supported comprehensive university in the southeast. After the records of graduates with missing or questionable data were removed from the data base (see below), a population of 868 was used for the study. Fifty-five percent of the graduates were female. Eleven percent were racial minorities. Average age at matriculation was eighteen. Twenty-seven percent were admitted as developmental students. A diverse array of academic majors were represented.

Graduates' mean cumulative grade point average was 2.79 and mean cumulative quarter credit hours completed was 205. Mean cumulative grade point average at the conclusion of the graduates' freshman year was 2.51. Mean SAT verbal and mathematics scores were 410 and 456, respectively, and graduates mean high school grade point average was 2.73. Graduates dropped courses two times on average during their enrollment. Nine percent of the graduates enrolled in a university orientation/transition to college course. Thirty-five percent received financial aid during their freshman year. Seventy-nine percent lived in a university residence hall during their freshman year. Total quarters of enrollment for the graduates ranged from eleven to twenty-eight with a mean of fifteen and a median of fourteen.

Design and Procedure

A data file for all 1992 bachelors degree recipients was obtained which included graduates' gender, race, date of birth, major at the time of graduation, admission status, SAT verbal and mathematics scores, high school grade point average, number of quarters attended, number of courses dropped, and graduation date. Graduates' grade point averages (final and at the conclusion of the freshman year), age at matriculation, and total credit hours completed were calculated and added to the data base along with their residence status (whether or not they lived in a residence hall during their freshman year), financial aid status (whether or not they received financial aid, what form of aid, and total dollar amount of aid for the freshman year), and whether or not graduates enrolled in an orientation course.

Subjects were screened from the data base who appeared to graduate with other than a bachelors degree, who appeared to graduate with fewer than the minimum required credit hours, and who were transfer or transient students. Number of quarters of enrollment until graduation (otherwise referred to as time to degree) served as the dependent variable. All of the other demographic, academic ability, and enrollment variables served as independent variables. Unfortunately, other potentially important predictor variables such as SES, data on interaction with faculty and students, and employment data, were not routinely collected by the institution.

Astin's (1991) input-environment-output (I-E-O) assessment model guided the analytic approach to the study. Admission status (1=regular freshman, 0=developmental studies freshman), age, gender (1=female, 0=male), high school grade point average, race (1=Caucasian, 0=non-Caucasian), and SAT composite scores served as student background variables which were first forced into a series of regression equations in a single block. College environment variables including graduates' college, receipt of financial aid during the freshman year (1=yes, 0=no), living in a university residence hall during the freshman year (1=yes, 0=no), and enrollment in an orientation course (1=yes, 0=no) were then entered into the multiple regressions as a second block. An intermediate outcome variable (grade point average at the conclusion of graduates' freshman year) constituted the third block. Finally, variables representing outcomes at the conclusion of the undergraduate experience (final cumulative grade point average, total credit hours earned, and number of courses dropped) were entered into the multiple regression equations as the final block.

Due to the exploratory nature of the current study time to degree was regressed on all input, environmental, and outcome variables; outcome variables were regressed on all input and environmental variables; and environmental variables were regressed on all student inputs. Thus the purpose of the current study should be viewed as theory-building rather than theory-testing. A total of eleven multiple regressions were performed. Again based upon Astin's (1991) approach, hierarchical multiple regression results were used to provide path coefficients for the causal model.

Results

The trimmed path analysis model is shown in Figure 1. Table 1 shows zero-order correlations between the dependent and independent variables, direct, indirect, and total effects, and the rank ordering of the total effects of each independent variable on the dependent variables.

Insert Figure 1 About Here

Insert Table 1 About Here

The path model explained 58% percent of the variance in time to degree in terms of student background, college experience, and outcome variables. Cumulative credit hours earned, freshman year grade point average, SAT scores, the number of courses dropped, high school grade point average, and age at matriculation had the greatest influences on the dependent variable. Little of the variance in cumulative credit hours earned or number of courses dropped was, in turn, explained by the model, but 37% of freshman year grade point average was explained by academic ability and other background variables. In summary, enrollment behaviors and academic ability were the best predictors of time to degree.

Discussion

The purpose of the current study was to assess the impact of a number of possible predictors on the total number of quarters of enrollment necessary for bachelors degree graduates to complete their degree requirements. Borrowing from the literature on educational attainment, a number of such possible predictors were identified. Because the study was limited to students who graduated from only one university, between college effects could not be assessed. Further, a number of possibly relevant student background, college environment, and student involvement effects could not be gaged because data were not routinely gathered and therefore not available for the study. Nevertheless, data on several student background characteristics, college environment variables, and enrollment variables were available and utilized. Thus while the results of the current study do not provide a complete explanation of the possible causes in variation in time to degree, it did provide a model to institutional researchers for such studies using data which is most often available to them.

As suggested by a number of the studies cited earlier, academic ability had the strongest effect, along with cumulative credit hours earned and courses dropped, on time to degree. Age had a fairly substantial effect; older students took longer to complete bachelors degrees. Females obtained their degrees slightly more quickly then males. As suggested by the literature on educational attainment, living in a university residence hall and enrolling in an orientation course fairly substantially decreased time to degree. Academic major or college attended had a less substantial effect; students with majors in the institution's college of health and professional studies completed their degrees somewhat more quickly.

As noted earlier, enrollment behaviors such as graduating with considerably more than the minimum required credit hours and dropping several courses had strong effects on time to degree. Yet, these behaviors are not well explained by the research model. Anecdotal evidence suggests, for instance, that students may earn substantially more than the minimum required number of credit hours because of enrollment in elective courses, because they change majors, because they were required to enroll in remedial courses, or because desired courses were not available and they enrolled in additional courses to maintain full-time status, but empirical research is needed to more thoroughly explore the effect of such behaviors and to suggest how they may be impacted by institutional policy.

The results of the current study suggest that institutional actions such as admitting higher academic ability students, limiting course dropping behavior, exploring reasons for and possibly limiting total credit hours earned will decrease time to degree. These conclusions, however, are influenced by the study's limitations (the tentative nature of the causal model,

reliance on data from only one institution thus not allowing for between-institution effects, and limited student background, college environment, and student involvement data). Further, the relatively liberal course withdrawal policy at the subjects' institution may not be representative of the majority of universities and thus may have influenced the results. The author intends to assess the efficacy of the proposed research model by utilizing the High School and Beyond database, thus allowing for the influence of between-institution effects and a more broad range of student background, college experience, and involvement variables on time to degree to be studied.

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Table 1.

Breakdown of Effects Generated by Paths in Trimmed Causal Model

Dependent Variable (Independent Variables)	Zero-Order Correlation	Direct Effect	Indirect Effect	Total Effect	Rank Order
Effects on College: A&S					
of High School GPA	-0.07	-0.11	0.00	-0.11	2
of SAT	0.04	0.12	0.00	0.12	1
Effects on College: Educ					
of Gender	0.26	0.24	0.00	0.24	1
of High School GPA	0.11	0.09	0.00	0.09	3
of Race	0.06	0.10	0.00	0.10	2
Effects on College: HPS					
of Gender	0.14	0.12	0.00	0.12	1
of Race	0.04	0.08	0.00	0.08	2
of SAT	-0.14	-0.12	0.00	-0.12	1
Effects on Financial Aid					
of High School GPA	0.24	0.18	0.00	0.18	2
of Race	-0.31	-0.32	0.00	-0.32	1
of SAT	0.13	0.15	0.00	0.15	3
Effects on Residence					
of Age	-0.19	-0.20	0.00	-0.20	1
of Race	-0.10	-0.08	0.00	-0.08	2
Effects on Freshman GPA					
of Financial Aid	0.18	0.07	0.00	0.07	6
of Admission Status		-0.10	0.00	-0.10	4
of Age	0.09	0.12	0.00	0.12	3
of Gender	0.09	0.09	0.00	0.09	5
of High School GPA	0.49	0.35	0.01	0.36	2
of Race	0.09	0.00	-0.02	-0.02	7
of SAT	0.46	0.40	0.01	0.41	1
Effects on Courses Dropped					
of Freshman GPA	-0.17	-0.15	0.00	-0.15	1
of Orientation Course	-0.16	-0.15	0.00	-0.15	1
of Financial Aid	0.00	0.00	-0.01	-0.01	5
of Age	-0.05	0.00	0.02	0.02	4
of Gender	-0.11	0.00	-0.01	-0.01	5
of High School GPA	-0.19	0.00	-0.05	-0.05	3
of SAT	-0.09	0.00	-0.06	-0.06	2
Effects on Cumulative Credit Hours					
of Orientation	-0.09	-0.08	0.00	-0.08	3
of College: HPS	0.18	0.18	0.00	0.18	1
of Gender	0.03	0.03	0.02	0.02	4
of Race	-0.06	0.00	0.01	0.01	5
of SAT	-0.12	-0.15	-0.02	-0.17	2

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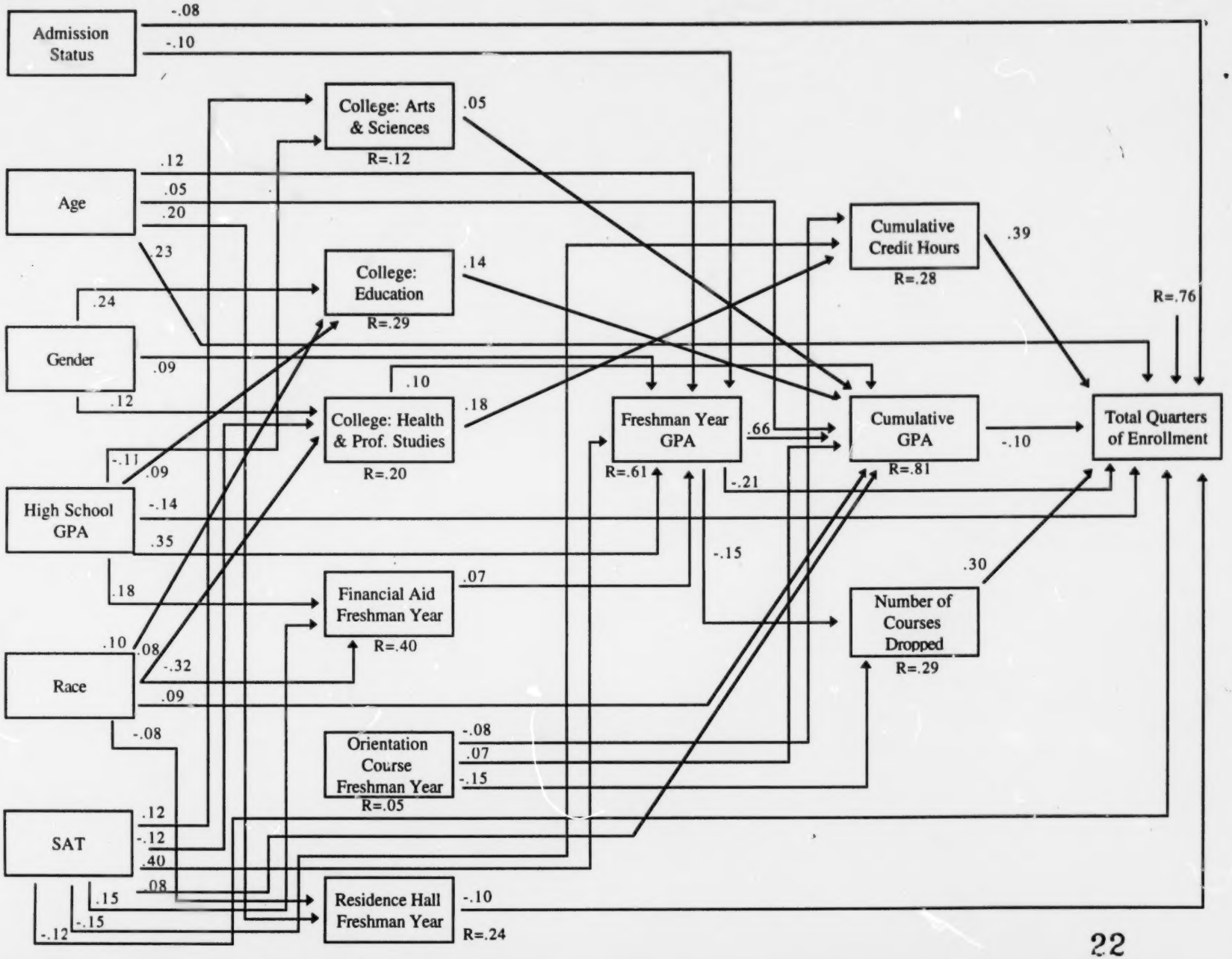
Table 1.

Breakdown of Effects Generated by Paths in Trimmed Causal Model (Continued)

Dependent Variable (Independent Variables)	Zero-Order Correlation	Direct Effect	Indirect Effect	Total Effect	Rank Order
Effects on Cumulative GPA					
of Freshman GPA	0.77	0.66	0.00	0.66	1
of College: A&S	0.01	0.05	0.00	0.05	9
of College: Educ	0.19	0.14	0.00	0.14	4
of College: HPS	0.03	0.10	0.00	0.10	6
of Financial Aid	0.08	0.00	0.05	0.05	9
of Orientation Course	0.11	0.07	0.00	0.07	8
of Age	0.11	0.05	0.08	0.13	5
of Gender	0.14	0.00	0.10	0.10	6
of High School GPA	0.46	0.00	0.24	0.24	3
of Race	0.18	0.09	0.00	0.09	7
of SAT	0.40	0.08	0.26	0.34	2
Effects on Total Quarters of Enrollment					
of Courses Dropped	0.43	0.30	0.00	0.30	4
of Cumulative Credit Hours	0.49	0.39	0.00	0.39	1
of Cumulative GPA	-0.47	-0.10	0.00	-0.10	7
of Freshman GPA	-0.42	-0.21	-0.12	-0.33	2
of College: A&S	-0.03	0.00	-0.01	-0.01	12
of College: Educ	-0.05	0.00	-0.01	-0.01	12
of College: HPS	0.14	0.00	0.06	0.06	9
of Financial Aid	-0.07	0.00	-0.03	-0.03	11
of Orientation Course	-0.16	0.00	-0.09	-0.09	8
of Residence		-0.10	0.00	-0.10	7
of Admission Status	-0.26	-0.08	0.03	-0.05	10
of Age	0.19	0.23	-0.04	0.19	6
of Gender	-0.07	0.00	-0.03	-0.03	11
of High School GPA	-0.28	-0.14	-0.10	-0.24	5
of SAT	-0.38	-0.12	-0.19	-0.31	3

Figure Caption

Figure 1. The trimmed path model.


Admission Status
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-.10
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R=.12
.05
Age
.12
.05
.20
College: Education
R=.29
.14
.23
.24
Gender
.09
.12
College: Health & Prof. Studies
R=.20
.18
.10
-.11
.09
High School GPA
-.14
.35
.18
Financial Aid Freshman Year
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.07
.10
.08
-.32
Race
.09
-.08
Orientation Course Freshman Year
R=.05
-.08
.07
-.15
.12
-.12
.40
.08
SAT
.15
-.15
-.12
Residence Hall Freshman Year
R=.24
-.10
Freshman Year GPA
R=.61
.66
Cumulative Credit Hours
R=.28
.39
Cumulative GPA
R=.81
-.10
-.21
-.15
Number of Courses Dropped
R=.29
.30
Total Quarters of Enrollment
R=.76